

MIDLAND

water pollution control plant

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET, TORONTO 5

OFFICE OF THE GENERAL MANAGER

Members of the Midland Local Advisory Committee,
Town of Midland.

Gentlemen:

We are happy to present you with the 1967 Operating Summary for the
Midland Water Pollution Control Plant, OWRC Project No. 2-0146-63.

Your co-operation with our staff throughout the year has been appreciated.
Only with such co-operation can the war against water pollution be waged
effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,
General Manager.

LIBRARY COPY

JAN 10 1969

ONTARIO WATER
RESOURCES COMMISSION



ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

J. A. VANCE, LL.D.
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J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

TELEPHONE 365-

D. S. CAVERLY
GENERAL MANAGER
W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Midland Water Pollution Control Plant, OWRC Project No. 2-0146-63.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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MIDLAND
water pollution control plant

operated for

THE TOWN OF MIDLAND

by the

ONTARIO WATER RESOURCES COMMISSION

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Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: A. Clark

801 Bay Street Toronto 5

'67 REVIEW

During the year, 480.65 million gallons were treated at a total expenditure of \$25,872.10. The cost of \$58.83 per million gallons is a reduction of 4.4% compared to 1966.

Average removal efficiencies of 40.9% BOD and 64% for suspended solids were achieved for the year.

The Midland Water Pollution Control Plant is staffed by two operators and supervision is eight hours per day, seven days a week. Regular inspections were carried out by the operations engineer during the year.

PROJECT COSTS

NET CAPITAL COST (Estimated)	\$822,029.32
DEDUCT - Portion Financed by CMHC (Estimated)	<u>496,399.44</u>
Long Term Debt to OWRC	<u>\$325,629.88</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967	\$ <u>17,234.32</u>
Debt Retirement	\$ 5,671.00
Reserve	5,513.61
Interest Charged	22,749.44
Net Operating	<u>25,872.10</u>
TOTAL	\$ <u>59,806.15</u>

RESERVE ACCOUNT

Balance at January 1, 1967	\$ 11,254.39
Deposited by Municipality	5,513.61
Interest Earned	<u>746.10</u>
	\$ 17,514.10
Less Expenditures	<u>(518.46)</u>
Balance at December 31, 1967	\$ <u>16,995.64</u>

MONTHLY OPERATING COSTS

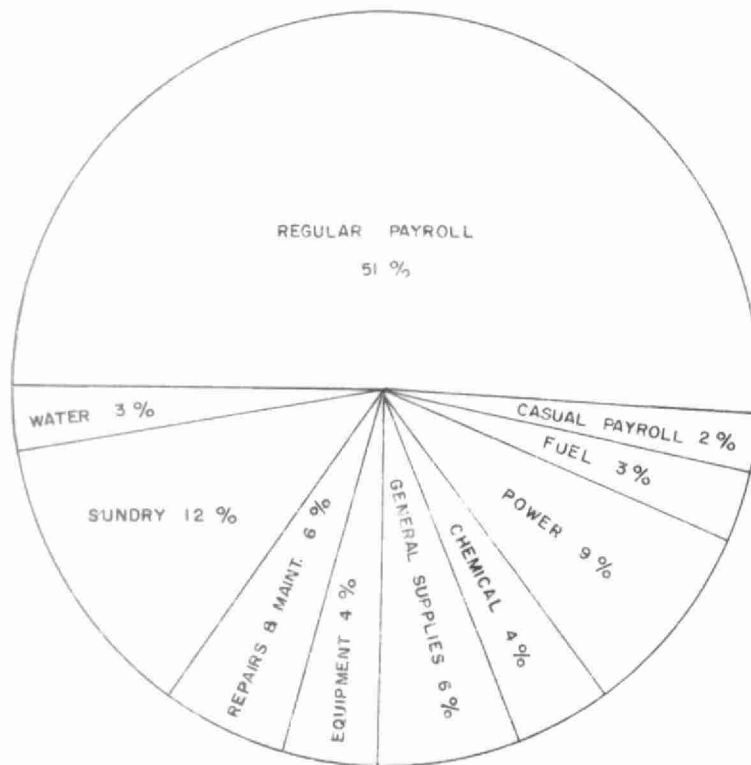
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	1,607.67	956.69		85.27	186.93		65.05	120.05		24.72	168.00
FEB	1,869.92	845.39		107.67	181.03		63.52	199.33		472.98	
MARCH	2,451.59	1487.79		112.69	172.28		168.67	17.01	145.91	347.24	
APRIL	1,861.03	957.65		93.27	192.51		219.80	267.40	67.29	73.11	
MAY	1,823.97	980.71		55.55	164.41		155.85	125.79	103.55	83.47	154.64
JUNE	2,849.12	1014.13	110.97		154.65	1109.85	113.53	71.49	4.89	260.34	9.27
JULY	2,065.33	892.54	234.27	98.77	197.93		132.65		380.53	120.64	
AUG	1,873.12	1303.57	209.50	28.47	147.21		113.23		16.21	45.12	9.81
SEPT	2,723.79	1524.70	86.30	25.60	175.35		87.55	125.04	437.70	145.15	116.40
OCT	1,758.30	885.40		35.20	182.66		207.11		80.85	367.08	
NOV	2,732.16	1321.79		37.50	195.96		64.27	180.27	133.95	798.42	
DEC	2,256.10	941.14		69.10	297.98		184.06		72.50	405.72	285.60
TOTAL	25,872.10	13111.50	641.04	749.09	2239.90	1109.85	1575.29	1106.38	1451.38	3143.99	744.68

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$1,720.80

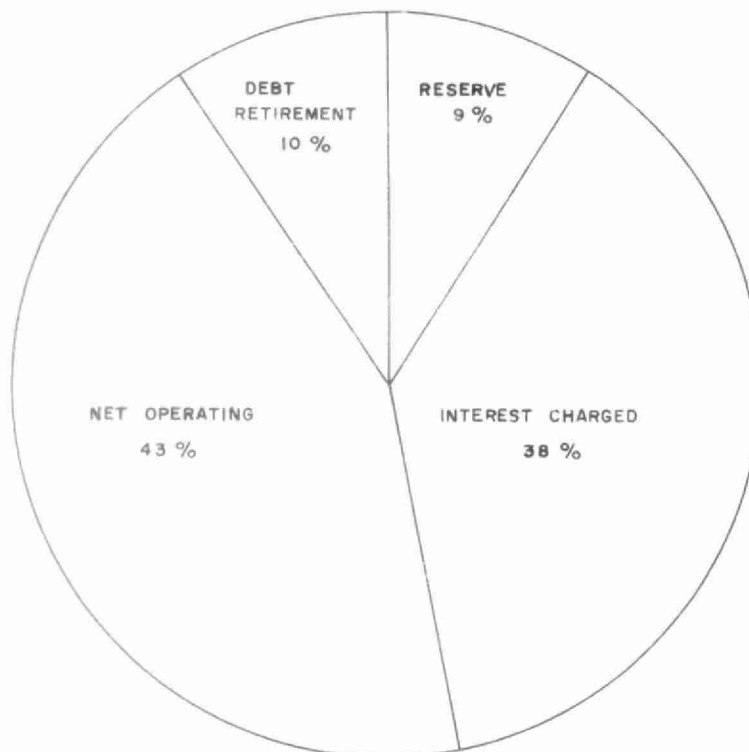
YEARLY OPERATING COSTS

YEAR	M. G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1966	367.76	\$20,703.17	\$ 56.29	7 CENTS
1967	480.65	\$25,972.10	\$ 53.83	12 CENTS

1967 OPERATING COSTS



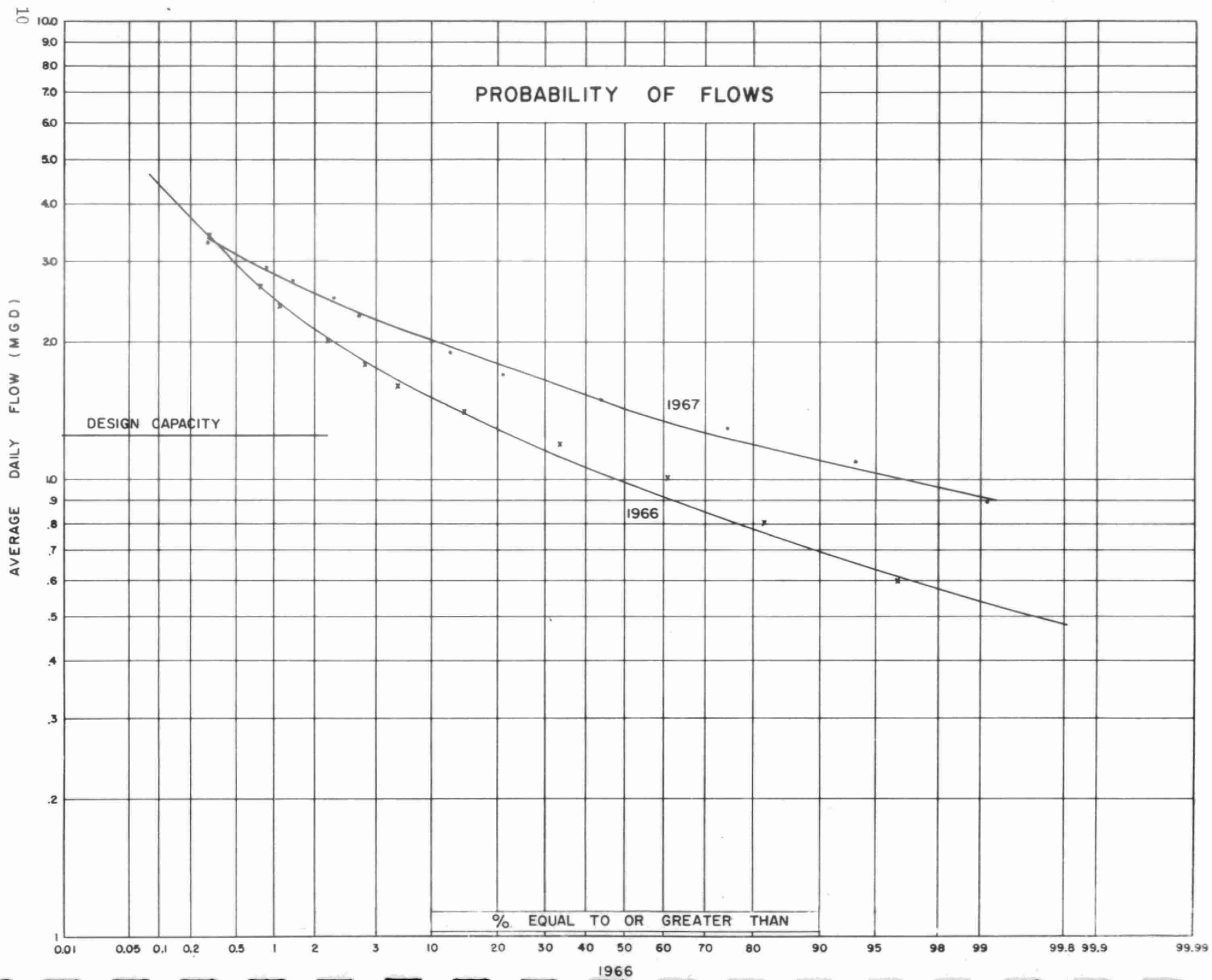
TOTAL ANNUAL COST

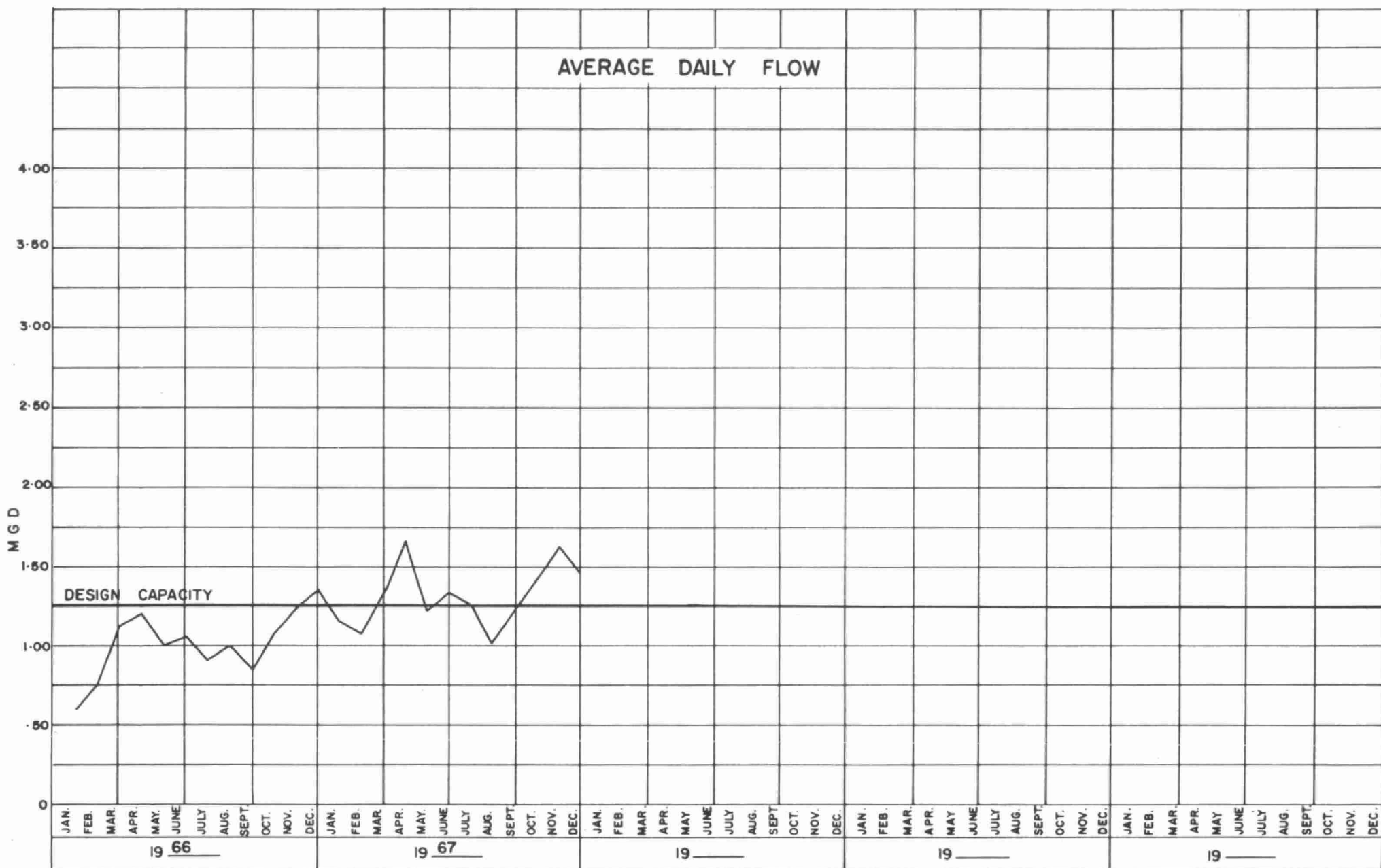


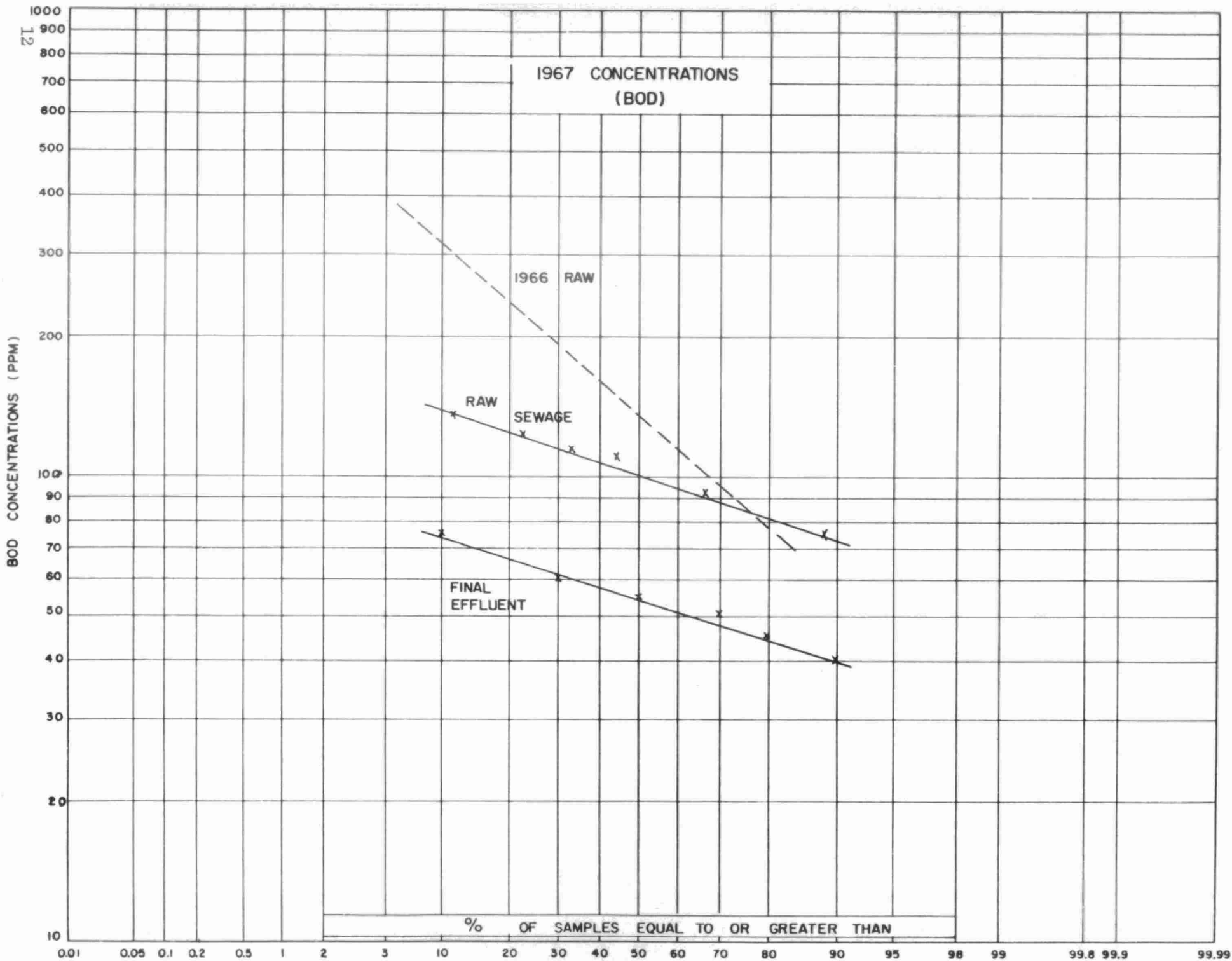
Process Data

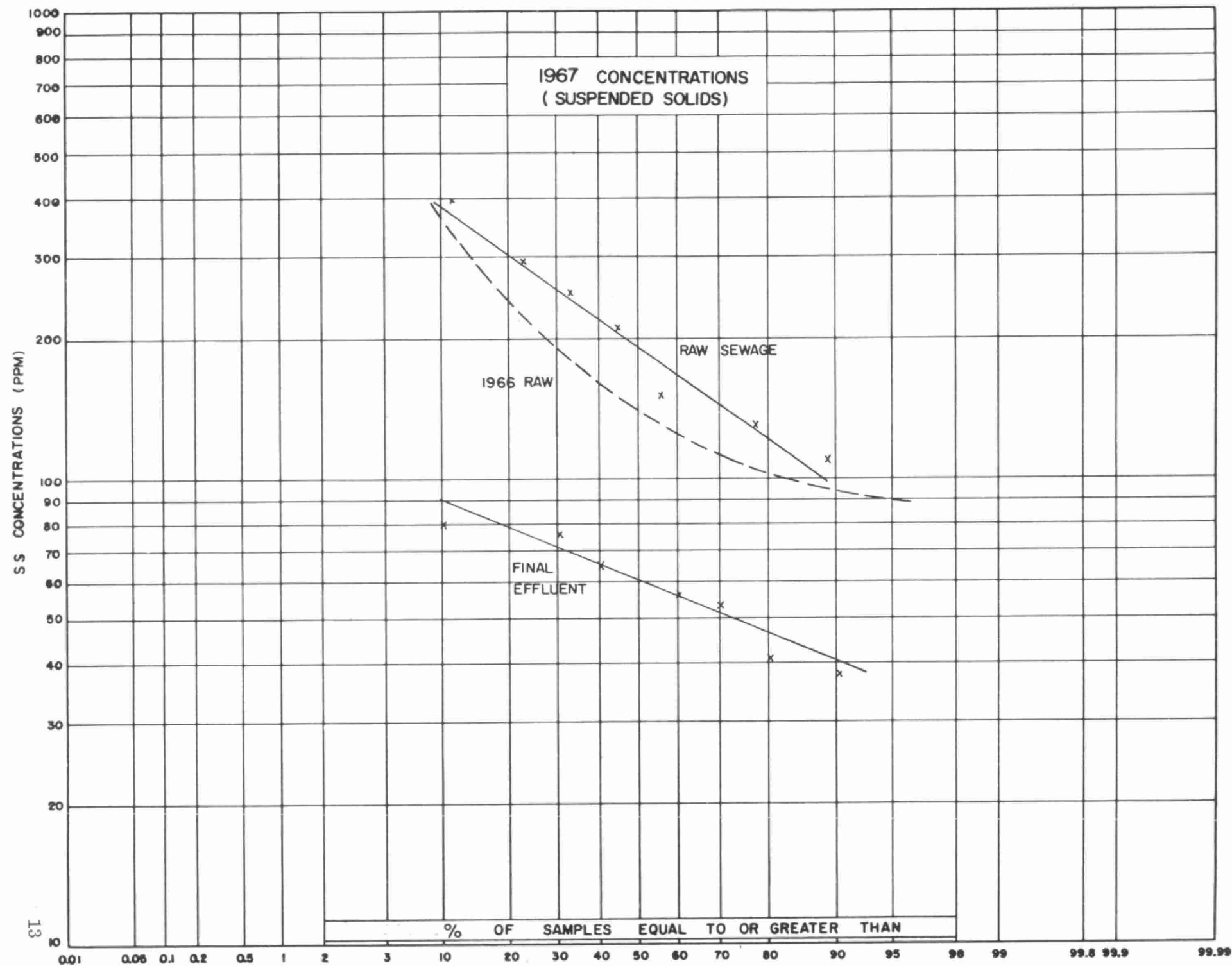
A total of 480,650,000 gallons was treated during the year for an average daily flow of 1.32 million gallons. This is an increase of 31% over the 1966 total flow, but account must be taken of high storm flows.

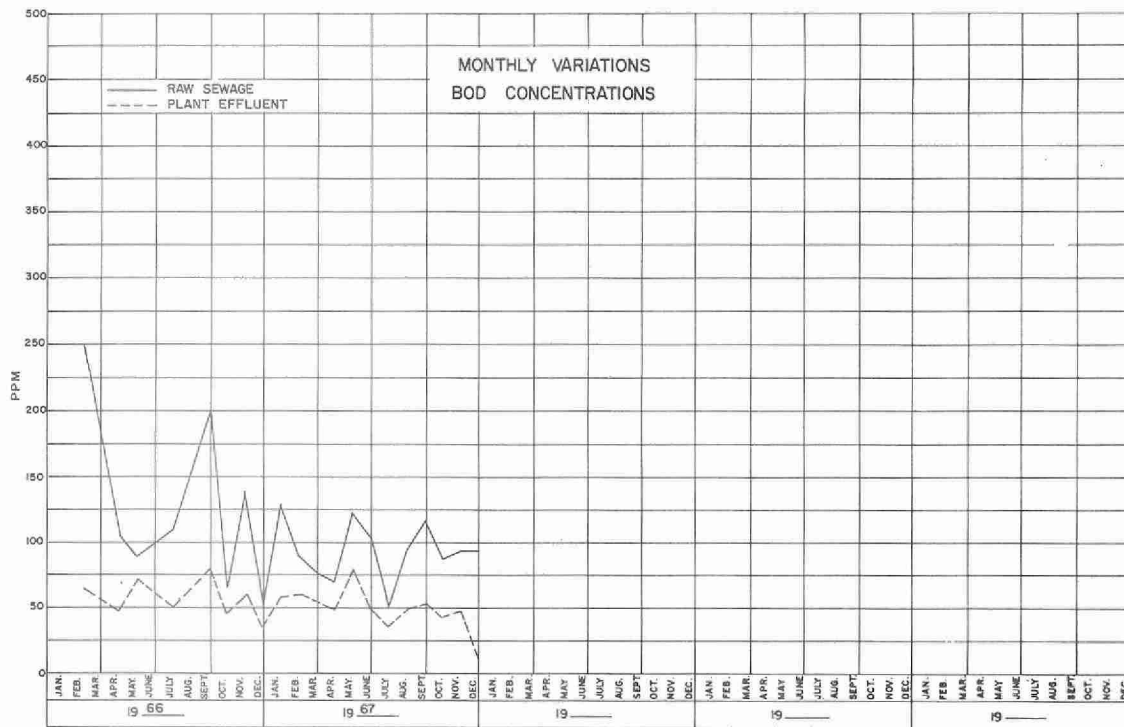
The probability of flows graph shows that the dry weather design flow of 1.25 mgd was exceeded 70% of the time in 1967.



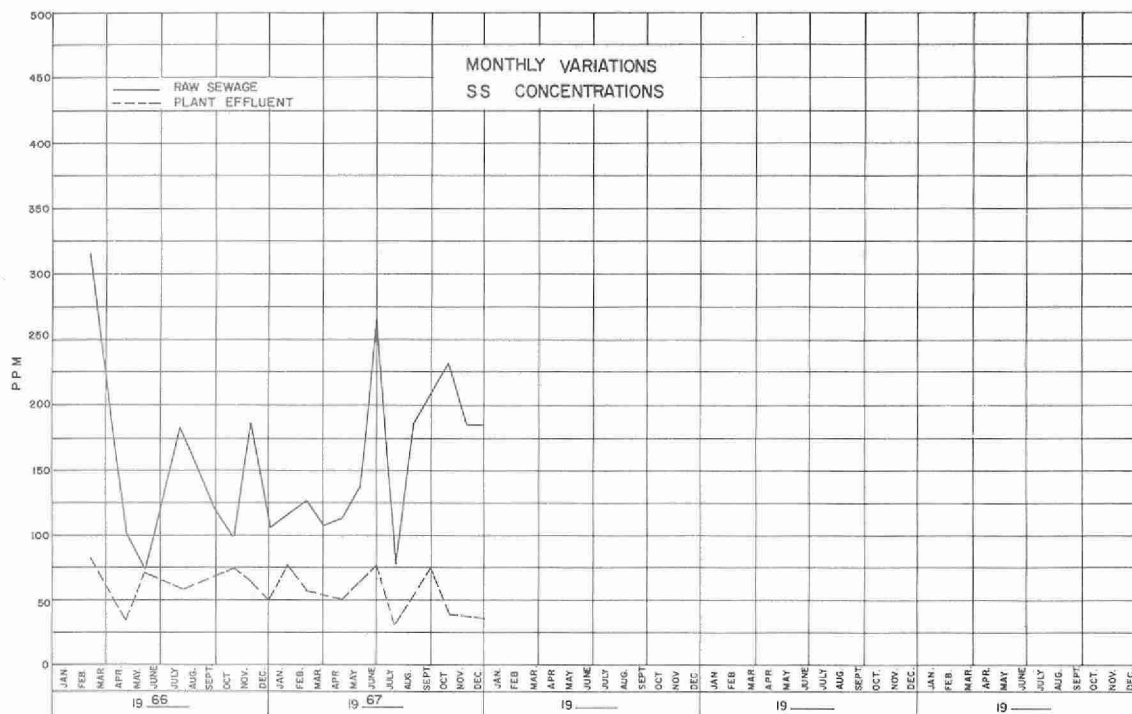








MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

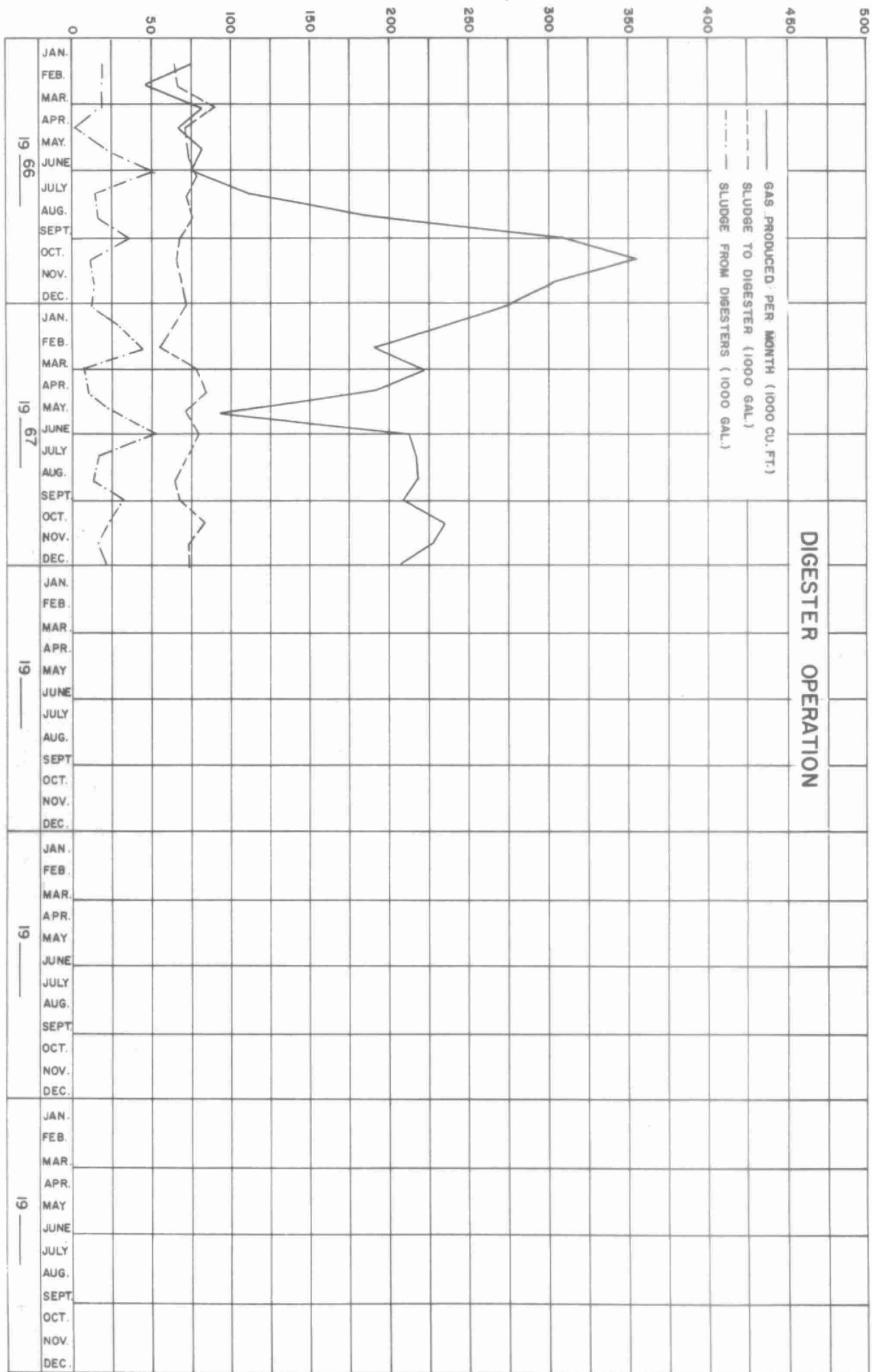
MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	130	57	56.2	13.12	390	78	80.0	56.10	37.5
FEB.	90	60	33.3	4.51	128	54	57.8	11.126	17.5
MAR.	71	53	25.4	5.70	110	54	50.9	11.51	37.5
APR.	71	49	31.0	5.48	114	52	54.4	15.44	141.
MAY	122	74	39.3	9.09	140	63	55.0	14.587	87.5
JUNE	105	50	52.4	11.09	274	77	71.9	39.72	245.
JULY	50	36	28.0	2.76	78	32	59.0	9.08	157.5
AUG.	* 94	49	40.9	7.04	* 186	56	64.0	20.35	204.5
SEPT.	115	53	53.9	11.37	210	76	63.8	24.58	243.
OCT.	88	45	48.9	9.46	232	40	82.8	42.26	135.
NOV.	* 94	49	40.9	11.01	* 186	56	64.0	31.80	47.5
DEC.	* 94	12	87.2	18.48	* 186	38	79.6	33.36	57.5
TOTAL	-	-	-	108.15	-	-	-	312.42	1411
AVG.	94	49	40.9	9.01	186	56	64.0	26.03	118

* Average values substituted.

COMMENTS

The average raw sewage BOD was 94 ppm and the effluent BOD was 49 ppm, resulting in a reduction of 40.9%. The suspended solids were reduced 64% from 186 ppm to 56 ppm. These reductions are in the range normally expected in primary plants treating weak sewage.

A total of 1411 cubic feet of grit was removed, for an average of 2.9 cubic feet of grit removed per million gallons treated.



DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu Ft
	GALLONS	% SOLIDS	% VOL MAT	GALLONS	% SOLIDS	% VOL MAT	
JAN	64868			29316			236.897
FEB.	55566			41445			179.912
MAR.	77501			6065			223.987
APR.	83545			9098			187.589
MAY	71518	3.53	64.30	25272	.23		91.188
JUNE	79415	10.11	40.75	5054	4.57		211.656
JULY	72849			16174			216.261
AUG.	66952			13141			217.178
SEPT.	68336			33359			209.172
OCT.	78608	13.00	32.92	23250	3.78		234.335
NOV.	73779			16173	14.77	29.86	227.034
DEC.	74616	6.40	59.38	21227			205.806
TOTAL	867553	-	-	239574	-	-	2441.015
AVG.	72296	8.26	49.33	19965	5.84	29.86	203.418

COMMENTS

The total amount of sludge pumped to the digesters was 867,553 gallons. Liquid digested sludge was hauled regularly throughout the year and 239,574 gallons were removed.

Production of digester gas totalled 2441,015 cubic feet, slightly more than in 1966.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	35.96	-	-
FEBRUARY	30.07	-	-
MARCH	41.10	-	-
APRIL	49.81	-	-
MAY	37.89	* 1340	6.45
JUNE	40.33	2310	5.73
JULY	39.46	2350	5.95
AUGUST	31.31	2200	7.03
SEPTEMBER	36.69	2240	6.11
OCTOBER	44.02	2520	5.72
NOVEMBER	48.93	2300	4.70
DECEMBER	45.08	2140	4.75
TOTAL	480.65	17400	-
AVERAGE	40.05	2175	5.80

* 17 days' chlorination

COMMENTS

Chlorination of the final effluent was started on May 15 and continued throughout the year. A chlorine residual of 0.5 ppm after a 15-minute contact period is maintained. Chlorine consumption for the year was 17,400 lbs. at an average dosage rate of 5.80 ppm.



CONCLUSIONS

The plant is hydraulically overloaded 70% of the time and the Town of Midland should be encouraged to continue their programme of storm water separation.

Plant performance and maintenance were very satisfactory throughout the year.

Date Due



